SINGLE-STAGE PFC AND POWER CONVERTER CIRCUIT

ABSTRACT OF THE DISCLOSURE

A power converter provides constant load power while achieving a high power factor in a single stage configuration with reduced component count and ratings. The power converter takes a rectified line input to a switching half-bridge that supplies current to a load. A series combination of shunt switch and capacitor is connected across the load to store energy from the input and supply energy to the load. The switches are operated with conduction angles that achieve constant power supplied to the load while drawing a sinusoidal current in phase with the input voltage to achieve high power factor. The circuit provides a simplified configuration over prior power converters that may be used with a resonant load as part of an electronic ballast or an AC-to-DC converter. The power converter configuration and operation also achieves a low total harmonic distortion on the input line power.